



## **Commercial Harbor Craft Proposed Regulation Workshop**

Sacramento  
July 27, 2006



California Environmental Protection Agency

Air Resources Board

## **Overview**

- ◆ EPA Marine Engine Categories
- ◆ Proposed Regulation
- ◆ Alternative Compliance Plan
- ◆ Definitions
- ◆ Testing
- ◆ Outstanding Issues

## Categorizing Vessels

- ◆ Tug/Tow and Ferries
- ◆ Crew, Supply, Pilot, Work, and Other Vessels
- ◆ Fishing Vessels

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## National Marine Engine Standards



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## Marine Engine Standards

- ◆ Tier 0 Engines are unregulated
- ◆ Tier I Marine Engine Standards are voluntary compliance with MARPOL Annex VI NOx limits
- ◆ US EPA has promulgated Tier II Marine Engine Standards 40 CFR 94
- ◆ Tier III are not yet promulgated
  - **Expecting a 90% reduction of PM and NOx from Tier 0**

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## Category 1 Engines Emission Reductions by Tier

		Category 1	
		NOx	PM
Tier 0	Tier I	-28%	
Tier 0	Tier II	-47%	
Tier 0	Tier III	-90%	-90%
Tier I	Tier II	-26%	
Tier II	Tier III	-81%	-73%

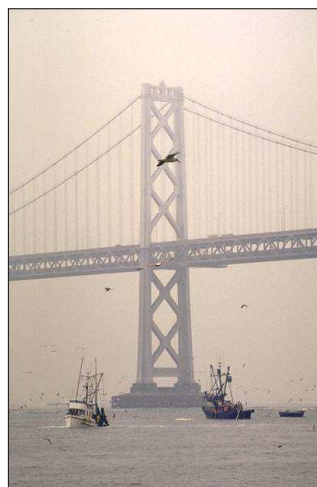
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## Category 2 Engines Emission Reductions by Tier

		Category 2	
		NOx	PM
Tier 0	Tier I	-28%	
Tier 0	Tier II	-37%	
Tier 0	Tier III	-90%	-90%
Tier I	Tier II	-14%	
Tier II	Tier III	-84%	-83%

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## Non-Fishing Vessel Fleet



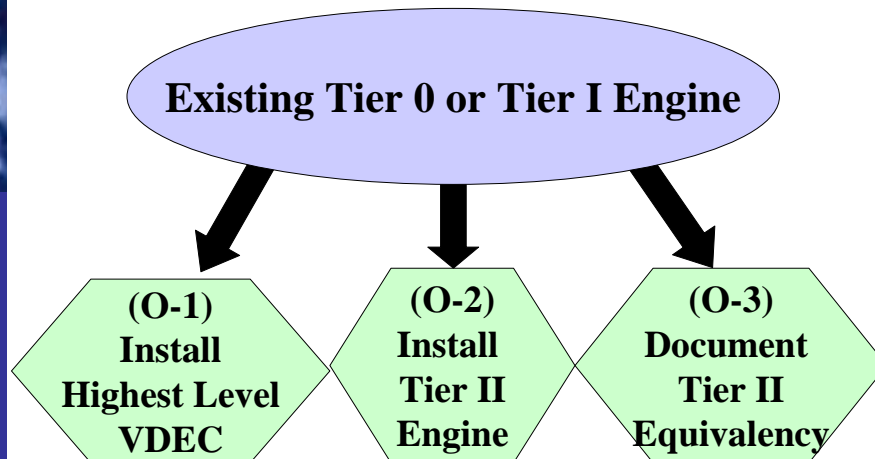
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## Non-Fishing Fleet

- ◆ Two Broad Categories
  - 1) Tug/Tow, and Ferries
  - 2) Work, Pilot, Crew, and Other
- ◆ Different requirements for the categories

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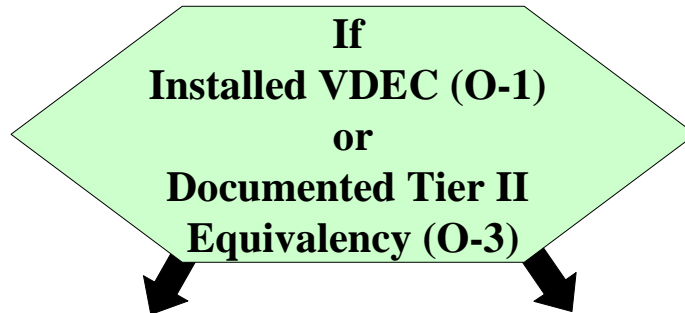
## Tug/Tow and Ferries Phase 1



**Compliance Dates 2008 - 2013**

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## Tug/Tow and Ferries Phase 2



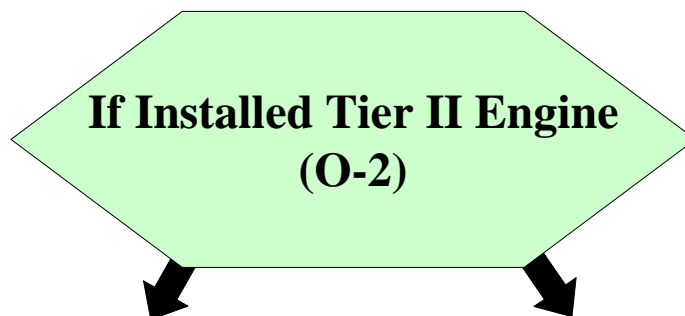
**Install  
Tier III Engine**

**Document  
Tier III Equivalency**

**Compliance Dates 2013 - 2018**

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## Tug/Tow and Ferries Phase 2



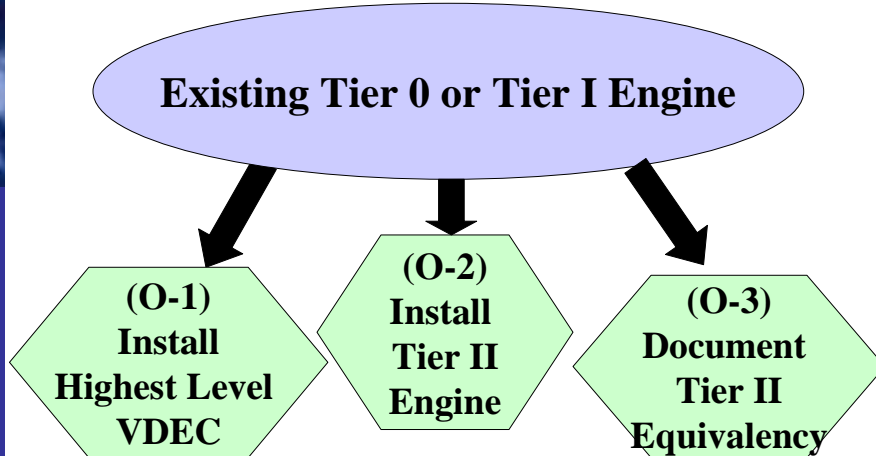
**Install  
Tier III Engine**

**Document  
Tier III Equivalency**

**Compliance Dates 2016 - 2021**

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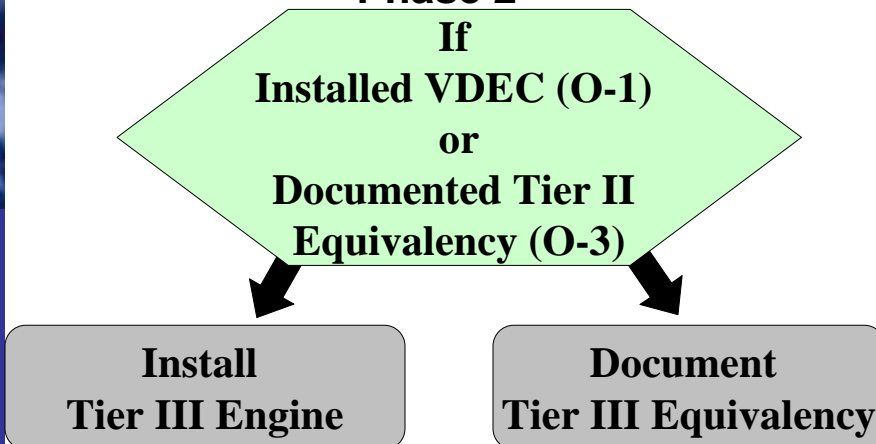
**Work, Pilot, Crew, Other Non-Fishing Vessels  
Phase 1**



**Compliance Dates 2008 - 2013**

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**Work, Pilot, Crew, Other Non-Fishing Vessels  
Phase 2**



**Compliance Dates 2013 - 2018**

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**Work, Pilot, Crew, Other Non-Fishing  
Vessels  
Phase 2**

**If Installed Tier II Engine  
(O-2)**

**Install  
Level 3 VDEC**

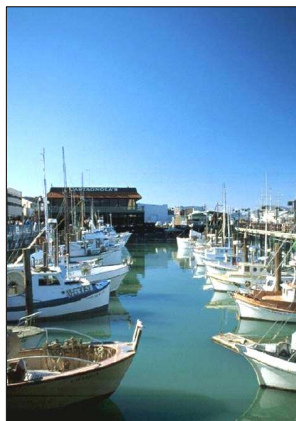
**Install  
Tier III Engine**

**Document  
Tier III  
Equivalency**

**Compliance Dates 2016 - 2021**

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**Fishing Vessels**



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## Fishing Vessels

- ◆ Fishing
  - Commercial Fishing
  - Commercial Passenger Fishing
- ◆ Approach designed to maintain level of Moyer availability

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## Fishing Vessels

Existing Tier 0 Engine

Install  
Level 1 VDEC

Document  
25% PM Reduction

Compliance Dates 2008 - 2016

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## Fishing Vessel Compliance

- ◆ Vessels with certified engines will be in compliance

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## Fishing Vessel Issues

- ◆ Economic Impacts
- ◆ Limited Strategies Available
- ◆ Technical Feasibility
- ◆ ARB staff evaluating other requirements for higher use vessels

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## **Alternate Compliance Plan**

- ◆ Engine Modifications
- ◆ Exhaust Treatment Control
- ◆ Engine Repower
- ◆ Alternative Fuels or fuel additives
- ◆ Shore Side Power
- ◆ Fleet Averaging

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## **Compliance Extensions**

- ◆ Engine Near Retirement
- ◆ No Verified Technology
- ◆ No Engine Available
- ◆ Experimental Technology

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## Changes to Definitions

- ◆ Regulated California Waters
- ◆ Tier 3 Engines

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## Test Methods

- ◆ ISO 8178
- ◆ Test Cycles
  - E3 – Propulsion Engines
  - D2 – Auxiliary Engines
- ◆ Fuel Correction Factors
- ◆ Reporting Requirements

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## Outstanding Items

- ◆ Economic Impacts
- ◆ Compliance Timelines
- ◆ Sell Through Provisions
- ◆ Applicability with other ATCMS
- ◆ EPA Rulemaking
- ◆ Low Use Exemptions
- ◆ Tech Assessment

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## Next Steps

- ◆ Next Workshop Aug. 30, 2006
- ◆ Workshop Early – Mid Sept.
- ◆ Release Initial Statement of Reasons
- ◆ Board Date November

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